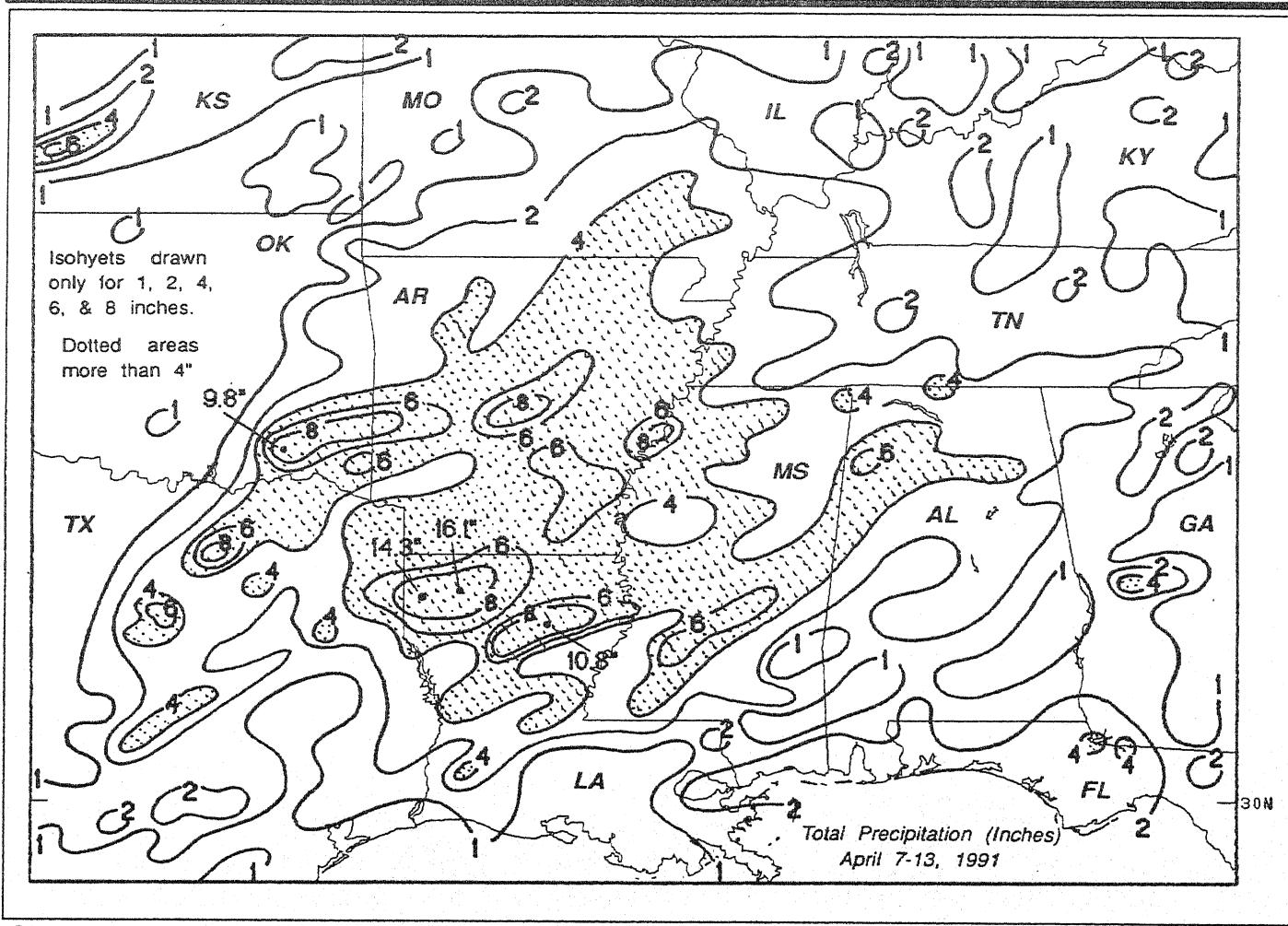


WEEKLY CLIMATE BULLETIN

No. 91/15

Washington, DC

April 13, 1991



Slow-moving cold fronts triggered numerous thunderstorms across the Deep South on two separate occasions during the week. There were nearly 400 reports of severe weather across the region on Tuesday, including damaging winds, large hail, and approximately 40 tornadoes. Three days later, more than 500 homes were flooded as inundating rainfall (up to 10 inches in 12 hours) pounded northwestern Louisiana, where weekly totals reached 16.1 inches (see *United States Weekly Climate Highlights* for more details).



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER



WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *U.S. cooling degree days (summer) or heating degree days (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

Major Climate Events and Anomalies as of April 18, 1992

1. Western United States:

MORE WARM CONDITIONS.

Very warm weather dominated the western half of the United States, with temperatures averaging up to 6°C above normal in parts of Arizona [19 weeks].

2. South-Central United States:

HEAVY RAIN CONTINUES.

More than 200 mm of rain drenched parts of southeastern Texas as six-week surpluses reached 135 mm. Meanwhile, heavy isolated thunderstorms brought 150 to 250 mm totals to parts of Oklahoma, causing some flash flooding [27 weeks].

3. West-Central South America:

WEST COAST UNUSUALLY WARM.

Temperatures again averaged as much as 5°C above normal along the coasts of Peru and northern Chile, with readings exceeding 35°C in a few areas [3 weeks].

4. Eastern Europe:

WET WEATHER DEVELOPS.

Abnormally heavy rains have persisted for several weeks, with many stations measuring 50 to 90 mm of rain last week. Weekly totals approached 110 mm in Yugoslavia [5 weeks].

5. Northwestern Africa:

STILL COLD AND WET.

Temperatures averaged as much as 8°C below normal across Algeria. Up to 45 mm of rain fell on northeastern Algeria as precipitation surpluses since mid-March reached 175 mm at some locations [5 weeks].

6. Southern Africa:

HOT AND DRY WEATHER CONTINUES.

Readings soared to 35°C across northern areas, and temperatures averaged up to 5°C above normal at some locations [12 weeks]. General-

ly less than 15 mm of rain was reported as moisture deficits since mid-March approached 140 mm. The Food and Agriculture Organization (FAO) of the United Nations reported major food shortages, with Mozambique most severely affected by the dry weather. Since the region is moving into its normal dry season [May - September], significant relief would be unlikely to occur before next October [19 weeks].

7. Sri Lanka and Southern India:

LIGHT RAINS PROVIDE LIMITED RELIEF.

Up to 50 mm of rain dampened parts of Sri Lanka, but most of southern India had little or no precipitation. Moisture deficits since mid-March climbed to 210 mm in some areas [11 weeks].

8. Eastern China, Korea, Taiwan, and Western Japan:

MORE HEAVY RAINS.

As much as 150 mm of rain drenched some stations. Six-week precipitation surpluses of 200 to 430 mm have accumulated at a few locations [11 weeks].

9. Southeastern Asia and the Philippines:

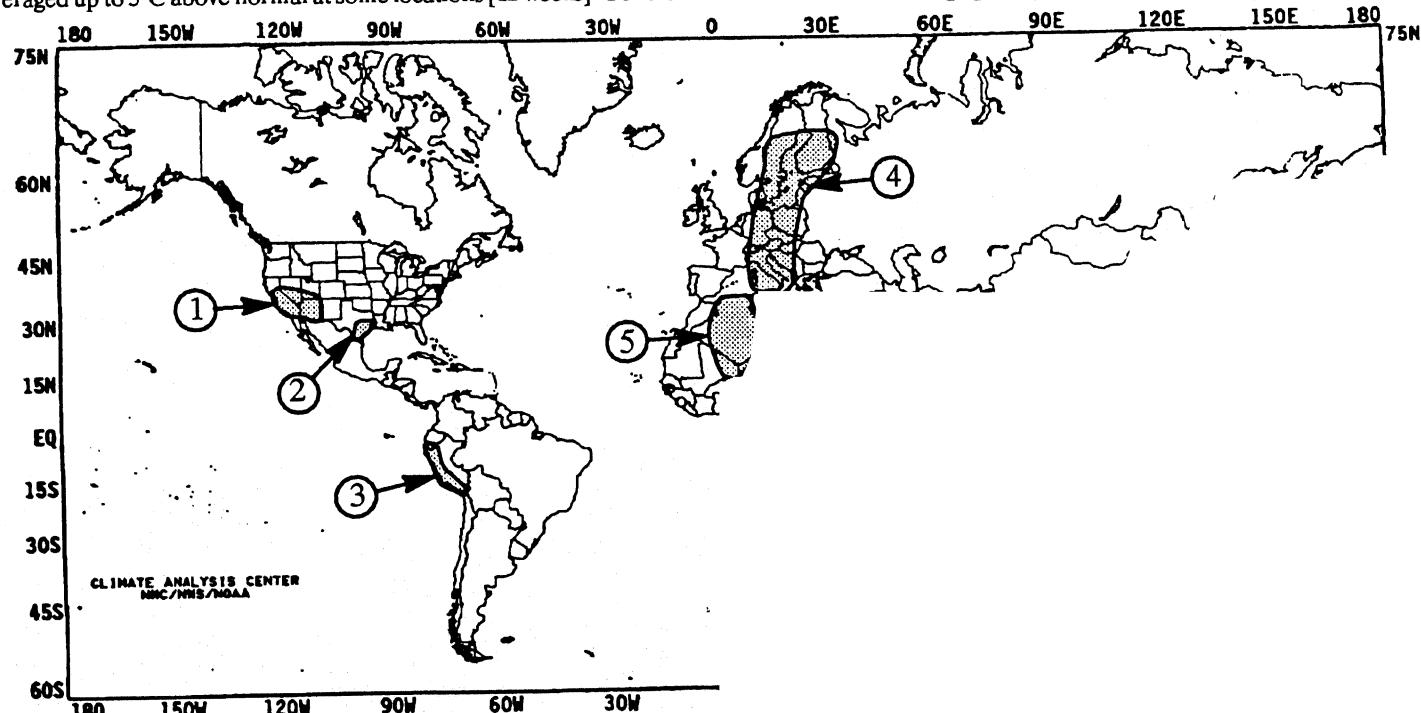
HEAT WAVE AGGRAVATES DRYNESS.

Many locations in Thailand experienced a heat wave, with highs above 40°C and weekly departures approaching +3°C [2 weeks]. Scanty rainfall was reported across most of the region as deficits since mid-March reached 150 mm; however, isolated areas of Thailand received up to 40 mm, and northern portions of Luzon Island in the Philippines measured as much as 100 mm (front cover) [16 weeks].

10. Southwestern Australia:

ABUNDANT RAINS CONTINUE.

Up to 90 mm of rain drenched the area as surpluses reached 160 mm since mid-March (page 6) [7 weeks].



TEXT: Approximate duration of anomalies is in brackets. Precipitation surpluses are in millimeters. Temperature anomalies are in degrees Celsius.

MAP: Approximate locations of major anomalies and episodic events. Shaded areas indicate areas of anomalies. Numbered circles point to specific locations: (1) Western United States; (2) South-Central United States; (3) West-Central South America; (4) Eastern Europe; (5) Northwestern Africa.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS FOR THE WEEK OF APRIL 12-18, 1992

Strong spring thunderstorms raged from the southern plains to the lower Great Lakes while wintry conditions dominated from the northern Plains eastward to northern New England. Severe thunderstorms packing heavy rain, large hail, damaging winds, and numerous tornadoes tore through portions of the Great Plains and Ohio Valley. More than 5 inches of rain inundated parts of southeastern Texas and central Oklahoma, causing flash floods (Figure 1). In Oklahoma, flooding claimed two lives and left up to 4 feet of water on the streets of Lawton while, farther south, up to 18 inches of golf ball size hail piled up across parts of Hall County in Texas, according to press reports. More than a dozen tornadoes touched down in the Plains and Midwest. A tornado near Plymouth, MI destroyed three mobile homes and damaged nearly a dozen others on Thursday. Meanwhile, unseasonably warm weather dominated from the central High Plains eastward to the central Appalachians. More than two dozen daily record highs were established from Wyoming to West Virginia as readings soared above 80°F. In sharp contrast, Arctic air settled across the northern tier of states from the Dakotas eastward, producing a dozen record lows as readings plunged to near zero. More than 6 inches of snow blanketed parts of the Northeast. Farther west, heavy snow buried the Colorado Rockies, with up to 10 inches falling at trail. In Alaska, bitterly cold conditions gripped interior sections early in the week. The mercury sank to -23°F at Fairbanks, AK on Monday, setting a record for the lowest reading so late in the season. However, by Thursday, readings had rebounded into the fifties.

The week began with a cold front stretched from western New England through the Ohio and middle Mississippi Valleys and into the southern Plains. Behind the front, sharply colder conditions settled into the northern U.S. Early a dozen record lows were observed from the northern Plains to the Ohio Valley with readings plummeting to below zero in the upper peninsula of Michigan. A wintry mixture of precipitation fell across the upper Midwest on Sunday, making driving hazardous on portions of I-90 in Minnesota. In sharp contrast, unusually warm weather enveloped the central Rockies, southern Plains and lower Mississippi Valley. Several record daily highs were set from Wyoming to Alabama. Farther west, a storm system and trailing cold front moved across the northern half of the Pacific Coast, spreading in from northern California to Washington, while a storm in the Atlantic Ocean generated high surf along Florida's east coast.

During the last half of the week, severe weather broke out across much of the nation's midsection as a storm system

tracked from the central High Plains to the Northeast. Slow moving thunderstorms unleashed torrential rains across portions of Texas and Oklahoma, causing flash floods. More than 5 inches of rain was measured at Victoria, TX, and flash flooding affected portions of already-saturated southeastern Texas. To the north, up to 8 inches of rain drenched central Oklahoma. As the low continued to the northeast, strong thunderstorms dumped heavy rain across much of the Midwest and Ohio Valley. Eventually, the system pushed into the Northeast where it collided with much colder air, producing up to 9 inches of snow in northern New England. Farther west, another cold front pushed into the Pacific Northwest accompanied by heavy rain and winds near 50 mph.

According to the River Forecast Centers, the greatest weekly precipitation totals (more than 2 inches) fell across most of the southern Plains and Mississippi Valley, the Midwest, the Ohio Valley, portions of the Great Lakes, central New England, the central Rockies, the northern half of the West Coast, southeastern Alaska, and scattered sections of Florida, the Appalachians, and the northern High Plains (Table 1). Light to moderate amounts were measured across most of the remainder of the nation and the southern portions of Alaska, except for the coastal Plains of the Carolinas and Georgia, the Southwest, the southern half of California, and the northern half of Alaska, where little or no precipitation was observed.

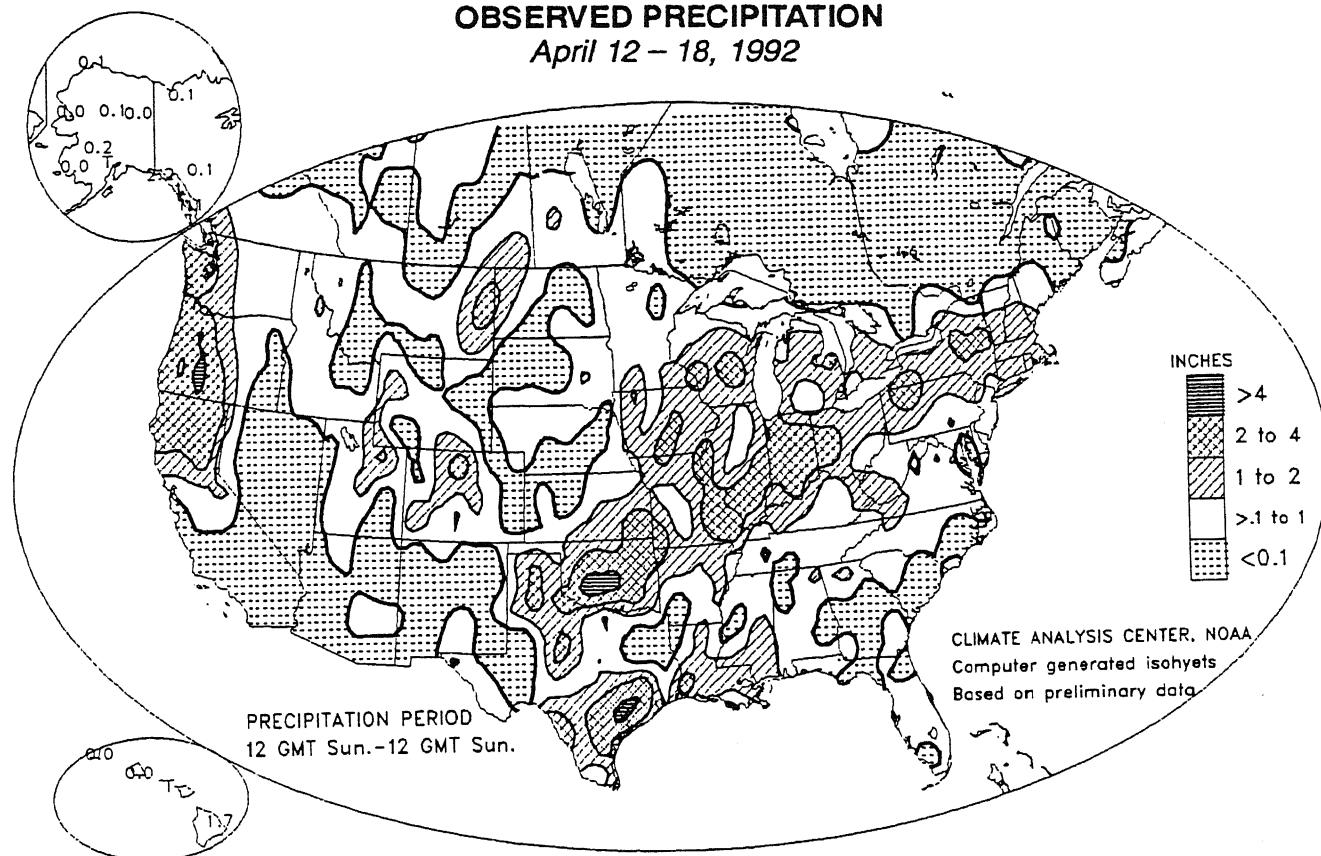
Warmer than normal conditions enveloped the majority of the lower 48 states, with weekly departures between +7°F and +10°F common from the central Appalachians to the lower Mississippi Valley, in the northern and central Rockies, and through portions of the Great Basin and Pacific Northwest (Table 2). Departures of +3°F to +6°F were prevalent in the mid-Atlantic, the lower Ohio Valley, the western and central Gulf Coast, and west of the central and southern Plains. In Alaska, unusually mild weather prevailed across the southeastern panhandle and through the western third of the state.

Unseasonably cold weather was confined to the northeastern quarter of the U.S. (Table 3). Weekly departures between -7°F and -10°F were observed from Minnesota eastward through the Great Lakes and across the northern half of New England. Temperatures averaged 3°F to 6°F below normal from southern New England westward to the eastern Dakotas, and across northeastern Florida and southeastern Georgia. Abnormally cold conditions also prevailed across the eastern two-thirds of Alaska and along the Aleutians, with weekly departures down to -9°F at Gulkana.

**TABLE 1. SELECTED STATIONS WITH 2.25 OR MORE INCHES OF PRECIPITATION
DURING THE WEEK OF APRIL 12 - 18, 1992**

| <u>STATION</u> | <u>TOTAL (INCHES)</u> | <u>STATION</u> | <u>TOTAL (INCHES)</u> |
|---------------------------|---------------------------|---------------------------------|---------------------------|
| CTORIA, TX | 5.29 | BELLINGHAM, WA | 2.70 |
| UILLAYUTE, WA | 4.60 | OLYMPIA, WA | 2.66 |
| T SILL/HENRY POST AAF, OK | 4.14 | SAN ANTONIO/RANDOLPH AFB, TX | 2.63 |
| TAMPEDE PASS, WA | 3.42 | DAYTON/WRIGHT-PATTERSON AFB, OH | 2.57 |
| NGSVILLE NAS, TX | 3.30 | TACOMA/FT LEWIS/GRAY AAF, WA | 2.50 |
| AYTON, OH | 3.27 | ANNETTE ISLAND, AK | 2.46 |
| ORTH BEND, OR | 3.24 | TACOMA/MCCHORD AFB, WA | 2.45 |
| STORIA, OR | 2.83 | INDIANAPOLIS, IN | 2.37 |
| URLINGTON, IA | 2.81 | SAGINAW, MI | 2.33 |
| BILENE/DYESS AFB, TX | 2.70 | MANSFIELD, OH | 2.26 |

OBSERVED PRECIPITATION
April 12 – 18, 1992



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)
April 12 – 18, 1992

TABLE 2. SELECTED STATIONS WITH TEMPERATURES AVERAGING 8.0°F OR MORE ABOVE NORMAL FOR THE WEEK OF APRIL 12 – 18, 1992

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|--------------------|-------------------|-----------------|--------------------|-------------------|-----------------|
| PHOENIX, AZ | +10.1 | 78.2 | EVANSVILLE, IN | +8.5 | 65.4 |
| SALT LAKE CITY, UT | +10.1 | 59.1 | CHEYENNE, WY | +8.4 | 50.3 |
| EUREKA, CA | +9.2 | 58.6 | ALAMOSA, CO | +8.4 | 49.1 |
| CASPER, WY | +9.2 | 51.5 | FAYETTEVILLE, AR | +8.3 | 66.6 |
| KNOXVILLE, TN | +9.0 | 68.8 | ELY, NV | +8.3 | 49.4 |
| CROSSVILLE, TN | +9.0 | 64.7 | ROCK SPRINGS, WY | +8.3 | 48.2 |
| PADUCAH, KY | +8.9 | 67.4 | MUSCLE SHOALS, AL | +8.2 | 70.1 |
| IDAHO FALLS, ID | +8.9 | 52.2 | HUNTSVILLE, AL | +8.2 | 70.0 |
| LANDER, WY | +8.8 | 51.2 | SPRINGFIELD, MO | +8.1 | 64.4 |
| ATLANTA, GA | +8.7 | 70.6 | CHATTANOOGA, TN | +8.0 | 68.4 |
| DENVER, CO | +8.7 | 56.2 | HARRISON, AR | +8.0 | 66.4 |
| LARAMIE, WY | +8.7 | 46.1 | GRAND JUNCTION, CO | +8.0 | 59.6 |
| BURLEY, ID | +8.6 | 54.4 | POCATELLO, ID | +8.0 | 52.7 |
| FT SMITH, AR | +8.5 | 70.1 | | | |

TABLE 3. SELECTED STATIONS WITH TEMPERATURES AVERAGING 8.0°F OR MORE BELOW NORMAL FOR THE WEEK OF APRIL 12 – 18, 1992

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|-----------------------|-------------------|-----------------|------------------|-------------------|-----------------|
| MONTPELIER, VT | -11.0 | 30.1 | GLENS FALLS, NY | -8.8 | 36.3 |
| ROME/GRIFFISS AFB, NY | -10.0 | 36.4 | SAGINAW, MI | -8.6 | 37.6 |
| ALPENA, MI | -9.9 | 31.2 | SYRACUSE, NY | -8.6 | 37.8 |
| CONCORD, NH | -9.6 | 34.7 | BURLINGTON, VT | -8.5 | 34.4 |
| UTICA, NY | -9.6 | 35.3 | AUGUSTA, ME | -8.5 | 34.9 |
| WORCESTER, MA | -9.4 | 35.8 | LEBANON, NH | -8.4 | 34.5 |
| MT WASHINGTON, NH | -9.0 | 13.7 | POUGHKEEPSIE, NY | -8.4 | 39.9 |
| GULKANA, AK | -8.9 | 22.5 | ROCHESTER, NY | -8.3 | 38.0 |
| ALBANY, NY | -8.9 | 38.0 | PARK FALLS, WI | -8.1 | 33.6 |
| HARTFORD, CT | -8.9 | 40.1 | MASSENA, NY | -8.0 | 35.2 |

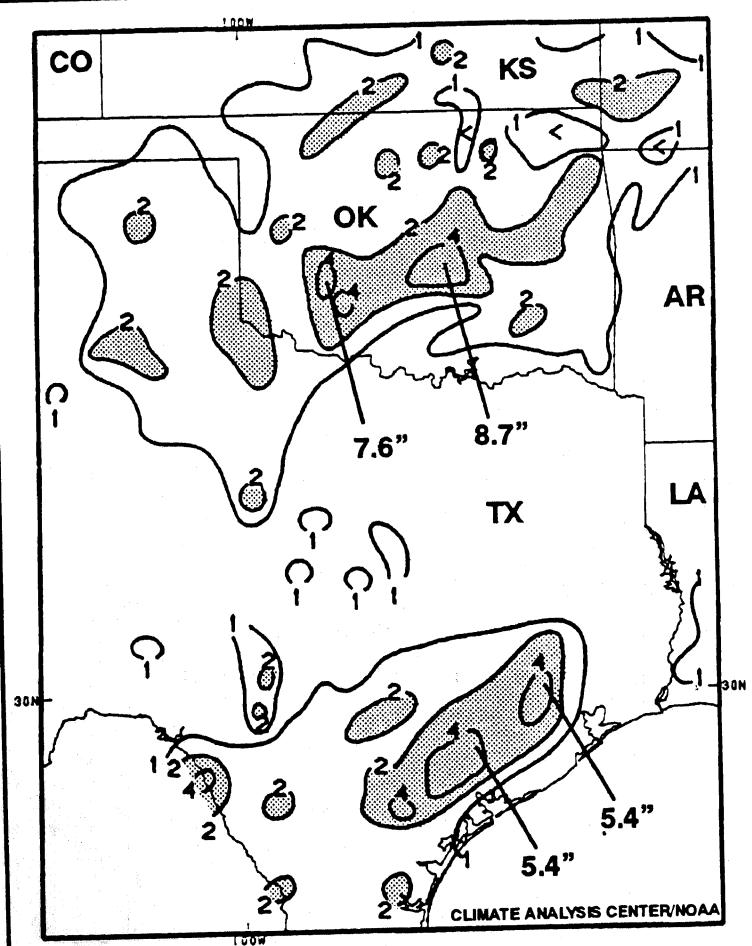
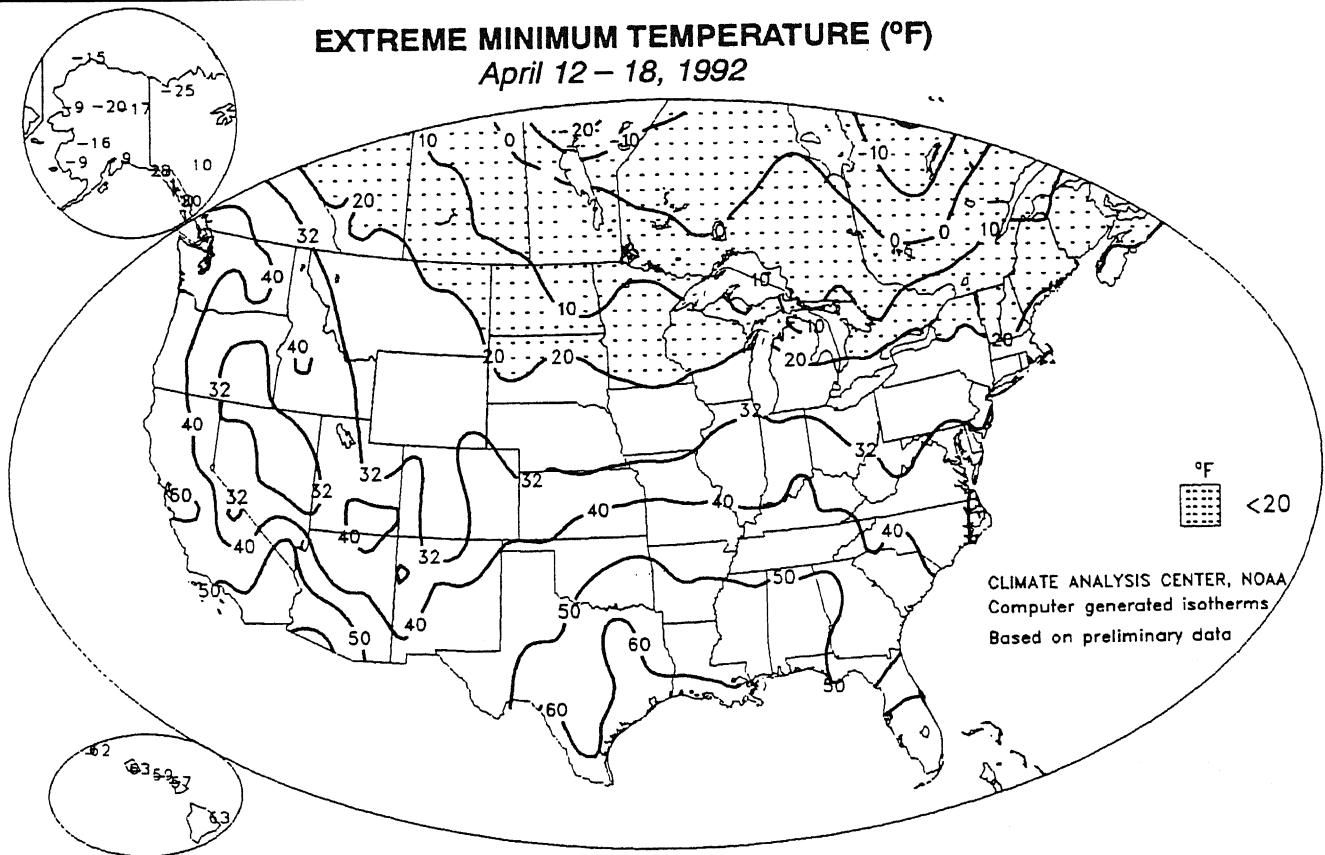


FIGURE 1. Total Precipitation across the south-central Great Plains during April 12 – 18, 1992. Isopleths drawn for 1, 2, and 4 inches. Shaded areas received at least 2 inches of rain. A few large mesoscale convective complexes (MCC's) formed along a weak frontal system and dumped heavy rains on portions of central Oklahoma and southeastern Texas last week. Most of these amounts fell within a short period of time (under 24 hours), engendering episodes of flash flooding and urban flooding, according to press reports. Periods of exceptionally heavy rain and flooding have plagued much of central and southeastern Texas since December 1991.

EXTREME MINIMUM TEMPERATURE (°F)

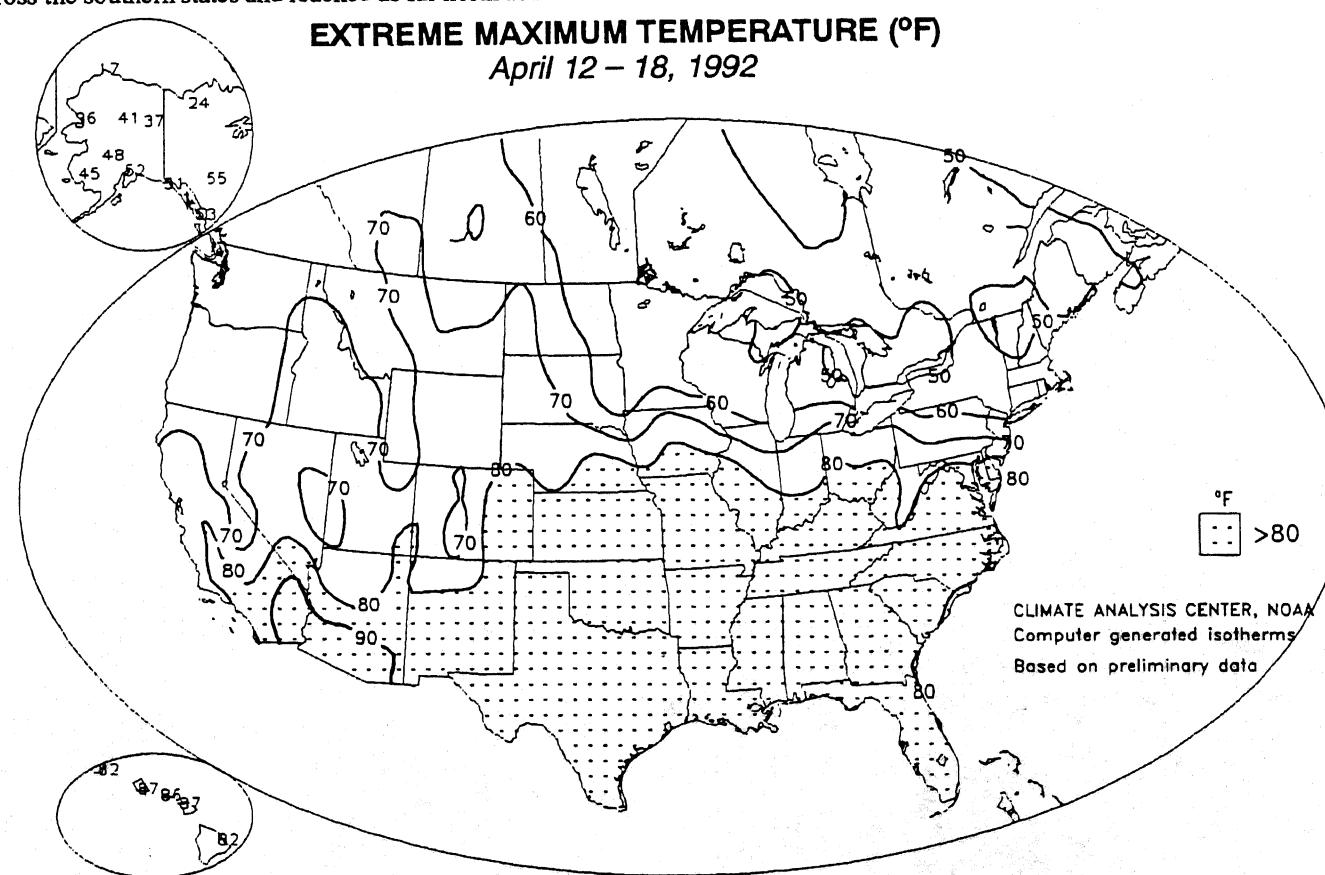
April 12–18, 1992



Subfreezing temperatures extended as far south as northern New Mexico and central West Virginia, but readings below 20°F were limited to the north-central states, upstate New York, and northern New England (top). In contrast, temperatures in the eighties were widespread across the southern states and reached as far north as southern Nebraska and the Mason-Dixon Line (bottom).

EXTREME MAXIMUM TEMPERATURE (°F)

MAXIMUM TEMP. 2.

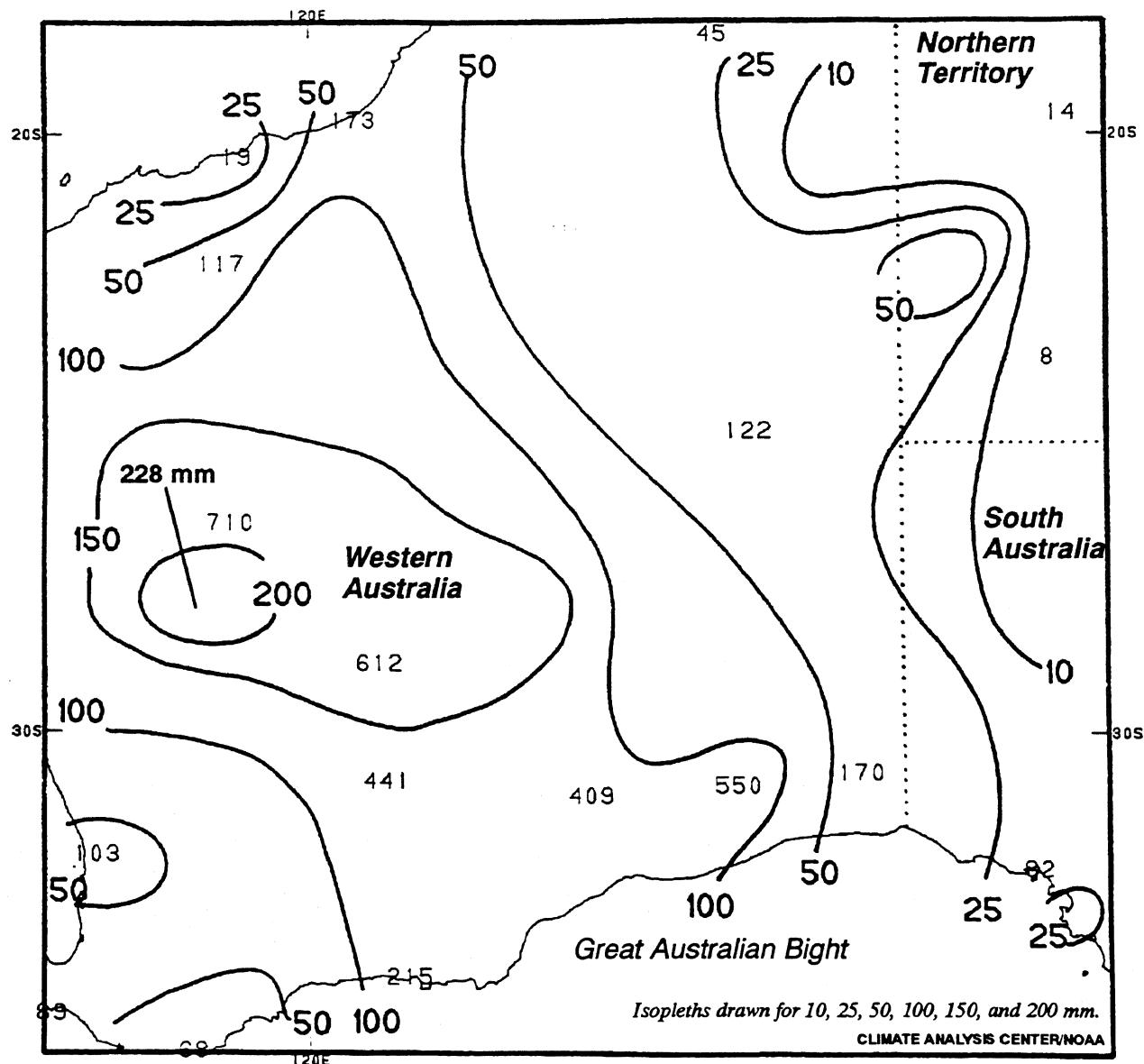


GLOBAL CLIMATE HIGHLIGHTS FEATURE

CONTOURS: TOTAL PRECIPITATION (mm)

PLOTTED VALUES: PERCENT OF NORMAL PRECIPITATION

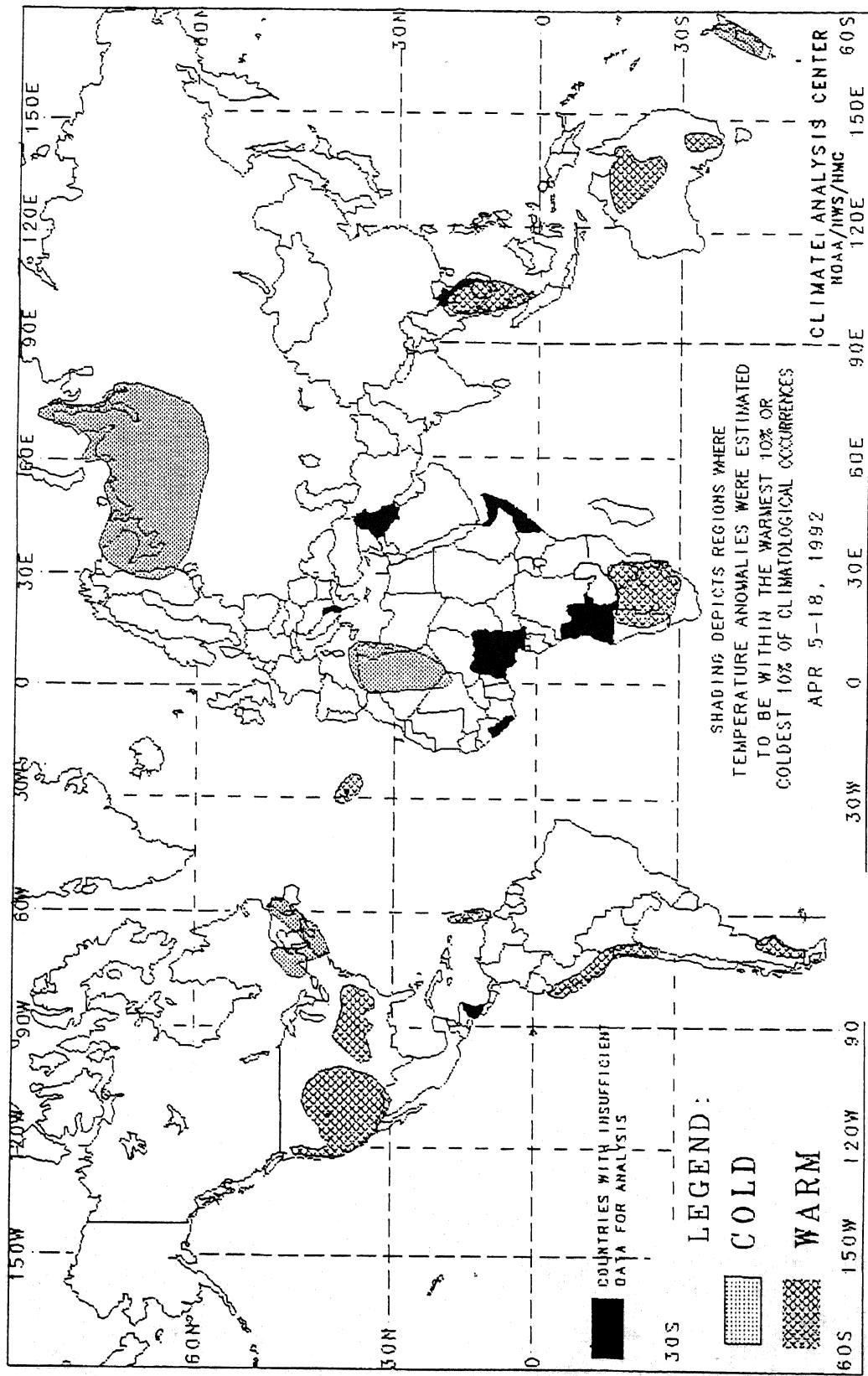
March 8 – April 18, 1992



The last six weeks have brought abnormally heavy rains to much of the western half of Australia. Since March 8, most locations have received between 25 mm and 228 mm of rain, which is 4 to 7 times the typical totals in southern and western sections of Western Australia. These areas have measured 75 mm to 165 mm more than normal for the period.

2-WEEK GLOBAL TEMPERATURE ANOMALIES

APRIL 5 - APRIL 18, 1992



The anomalies on this chart are based on a for which at least 13 days of temperature obser reports. Many stations do not operate on a twent observations are not taken. As a result of these minimum temperature may have a warm bias. 1 overestimation of the extent of some warm anom

Temperature anomalies are not depicted 1 departures from normal exceeds 1.5°C.

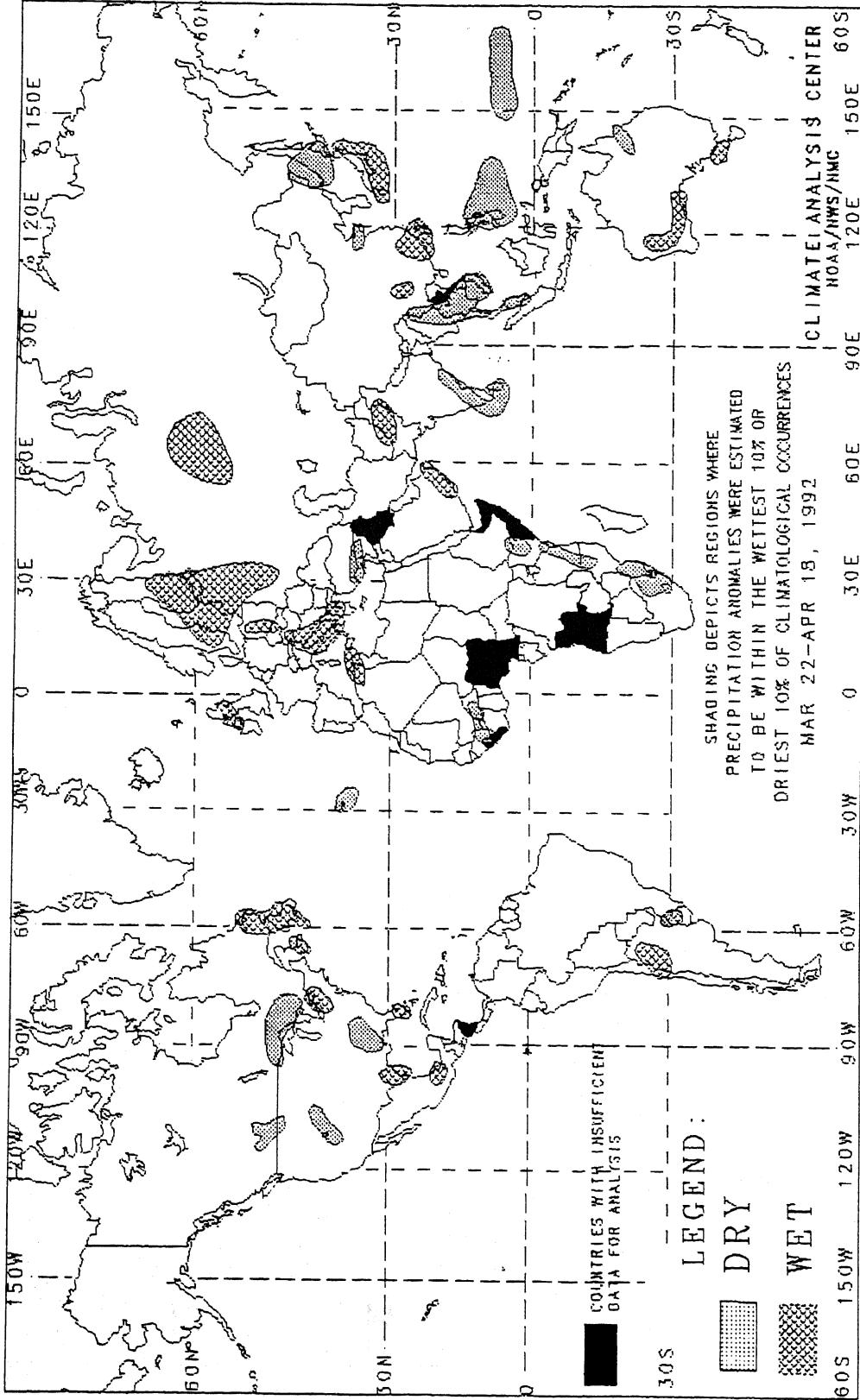
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In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

4-WEEK GLOBAL PRECIPITATION ANOMALIES

MARCH 22 - APRIL 18, 1992



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

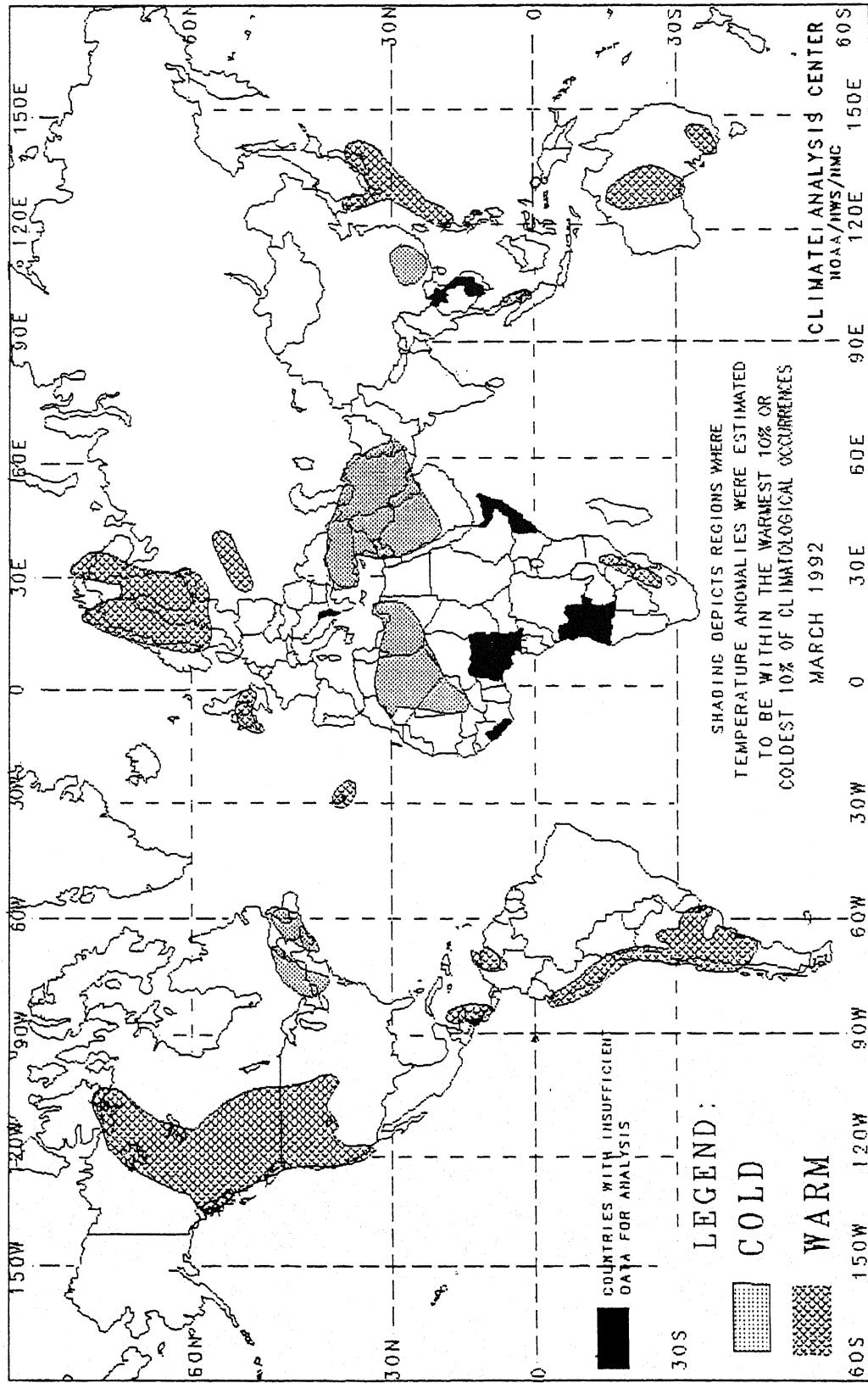
In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

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The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

MONTHLY GLOBAL TEMPERATURE ANOMALIES

MARCH 1992



The anomalies on this chart are based on approximately 2500 observing stations for which at least 26 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of one month temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

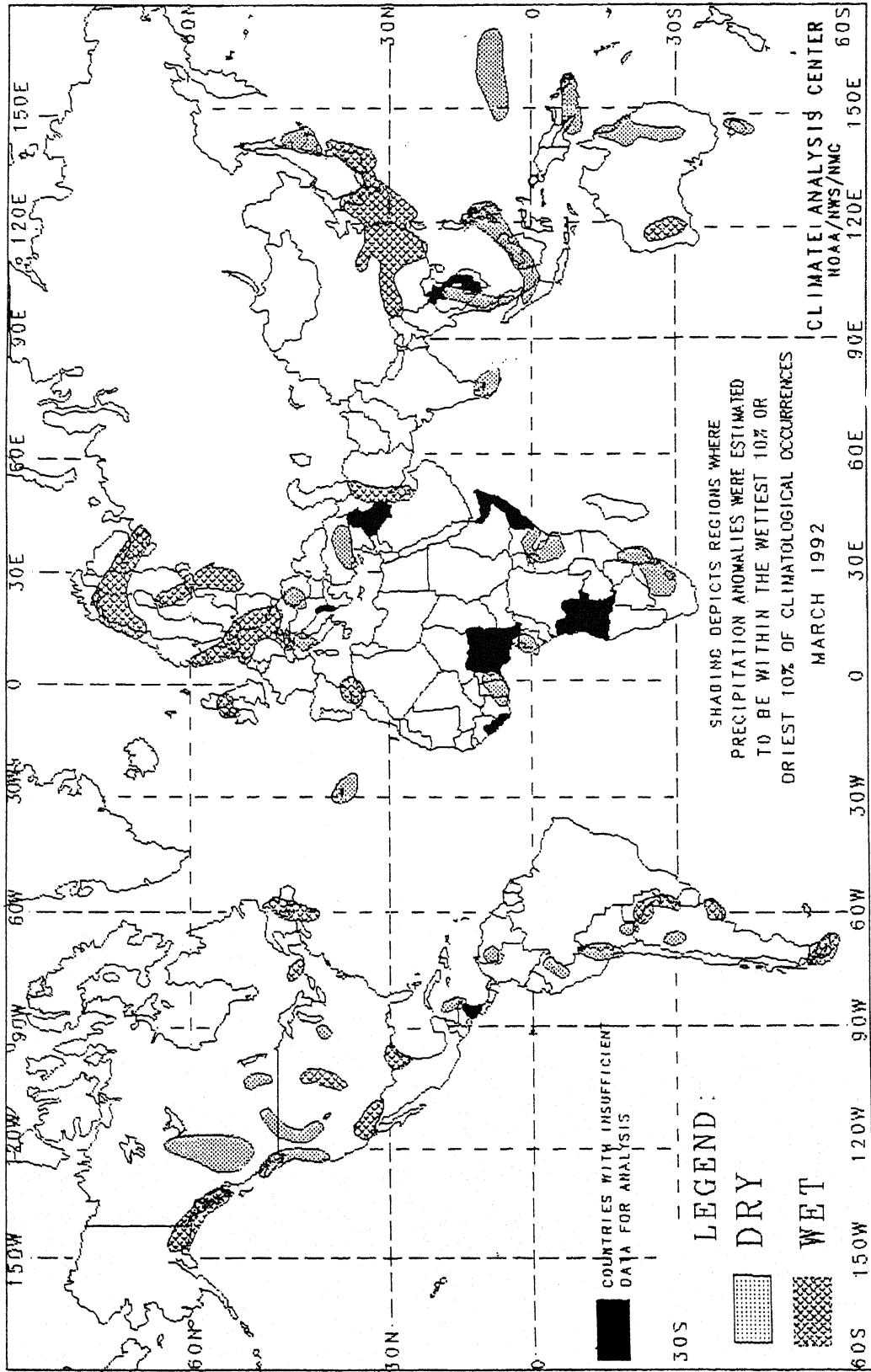
PRINCIPAL TEMPERATURE ANOMALIES

MARCH 1992

| REGIONS AFFECTED | TEMPERATURE AVERAGE (°C) | DEPARTURE FROM NORMAL (°C) | COMMENTS |
|---|--------------------------|----------------------------|-----------------------------------|
| NORTH AMERICA | | | |
| Western North America | -30 to +14 | +3 to +9 | MILD - 5 to 22 weeks |
| Southern Ontario and Southern Quebec | -10 to -5 | -2 to -3 | COLD - 6 to 9 weeks |
| Maritime Provinces | -8 to -2 | -2 to -4 | COLD - 5 to 14 weeks |
| Honduras and Costa Rica | +25 to +29 | Around +2 | Very warm first half of March |
| SOUTH AMERICA AND EASTERN PACIFIC | | | |
| Western Venezuela | +21 to +30 | +2 to +3 | Very warm first half of March |
| Southern and Central South America | +13 to +28 | +2 to +3 | WARM - 2 to 6 weeks |
| EUROPE AND THE MIDDLE EAST | | | |
| Azores | Around +16 | Around +2 | Very warm first half of March |
| Ireland and the United Kingdom | +8 to +9 | Around +2 | Very warm first half of March |
| Scandinavia and the Baltic States | -2 to +3 | +2 to +5 | MILD - 2 to 18 weeks |
| West-Central Commonwealth of Independent States | +2 to +3 | Around +5 | MILD - 18 weeks |
| Turkey and the Middle East | -10 to +18 | -2 to -8 | COLD - 2 to 26 weeks |
| AFRICA | | | |
| Northwestern Africa | +14 to +28 | Around -2 | COLD - 2 to 4 weeks |
| Southern Africa | +22 to +30 | +2 to +3 | WARM - 4 to 14 weeks |
| ASIA | | | |
| Southeastern China | +9 to +12 | -3 to -4 | Very cold early and late in March |
| Japan and Korea | +6 to +22 | +2 to +3 | WARM - 4 to 12 weeks |
| Peninsular Malaysia | Around +29 | Around +2 | Very warm second half of March |
| AUSTRALIA AND WESTERN PACIFIC | | | |
| Central Australia | +25 to +31 | +2 to +3 | WARM - 2 to 5 weeks |
| Southeastern Australia | +23 to +26 | +3 to +4 | WARM - 7 weeks |

MONTHLY GLOBAL PRECIPITATION ANOMALIES

MARCH 1992



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the one month period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total one month precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of one month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

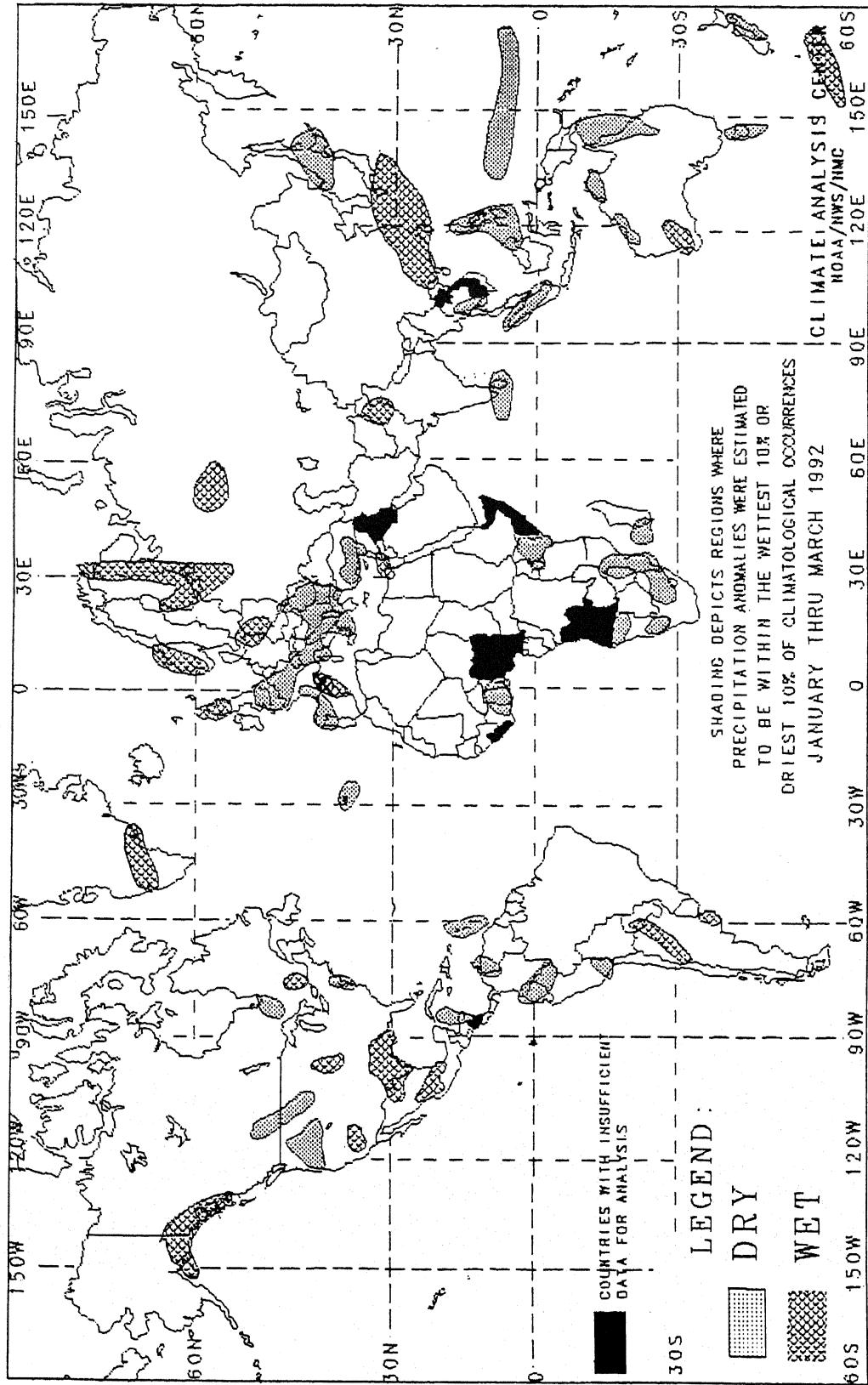
PRINCIPAL PRECIPITATION ANOMALIES

MARCH 1992

| REGIONS AFFECTED | PRECIPITATION TOTAL (MM) | PERCENT OF NORMAL | COMMENTS |
|---|--------------------------|-------------------|---|
| NORTH AMERICA | | | |
| Southeastern Alaska | 162 to 947 | 192 to 391 | WET - 6 to 10 weeks |
| West-Central Canada | 3 to 7 | 12 to 26 | DRY - 6 weeks |
| Pacific Northwest Coast and Southwestern British Columbia | 6 to 53 | 17 to 41 | DRY - 6 to 21 weeks |
| Northern Rockies | 4 to 11 | 17 to 32 | DRY - 6 to 14 weeks |
| Southwestern Manitoba | 0 to 2 | 0 to 11 | DRY - 6 weeks |
| Southwestern United States | 54 to 129 | 278 to 1220 | WET - 6 to 22 weeks |
| Central High Plains | 49 to 89 | 193 to 309 | WET - 4 to 8 weeks |
| Southern Texas | 104 to 160 | 237 to 525 | WET - 9 to 22 weeks |
| Northwestern Illinois and Northeastern Iowa | 27 to 29 | 39 to 45 | DRY - 5 weeks |
| Southwestern Quebec | 53 to 111 | 221 to 338 | WET - 8 weeks |
| Maritime Provinces | 139 to 187 | 142 to 171 | WET - 2 to 4 weeks |
| Honduras | 0 to 19 | 0 to 27 | DRY - 7 to 10 weeks |
| SOUTH AMERICA AND EASTERN PACIFIC | | | |
| Western Venezuela | 2 to 7 | 6 to 15 | DRY - 10 weeks |
| Northern Peru | 81 to 120 | 32 to 37 | DRY - 7 to 10 weeks |
| Southern Peru | 0 to 126 | 0 to 46 | DRY - 6 weeks |
| Southern Bolivia | 23 to 35 | 17 to 21 | DRY - 5 weeks |
| Northwestern Argentina | 0 to 14 | 0 to 56 | DRY - 6 weeks |
| Northeastern Argentina and Southern Paraguay | 234 to 351 | 162 to 295 | WET - 4 to 10 weeks |
| East-Central Argentina | Around 57 | Around 722 | Heavy precipitation second half of March |
| Extreme Southern Sections of Chile and Argentina | 44 to 118 | 129 to 235 | Heavy precipitation early and late in March |
| EUROPE AND THE MIDDLE EAST | | | |
| Northern Scandinavia | 44 to 125 | 158 to 215 | WET - 4 to 5 weeks |
| Baltics and Southern Finland | 55 to 70 | 177 to 277 | WET - 4 to 10 weeks |
| Central Europe | 50 to 422 | 175 to 360 | WET - 4 to 9 weeks |
| Scotland and Northern Ireland | 89 to 254 | 184 to 252 | WET - 2 to 4 weeks |
| Azores | 10 to 17 | 13 to 17 | DRY - 7 to 10 weeks |
| Northern Italy | 3 to 18 | 5 to 22 | DRY - 10 to 22 weeks |
| Southeastern Europe | 2 to 9 | 7 to 30 | DRY - 10 to 22 weeks |
| South-Central Turkey | 8 to 15 | 15 to 27 | DRY - 5 to 10 weeks |
| Iran and Arabian Peninsula | 63 to 76 | 224 to 639 | WET - 6 to 11 weeks |
| AFRICA | | | |
| Morocco and Argentina | 62 to 124 | 240 to 348 | Heavy precipitation early and late in March |
| Gulf of Guinea Coast | 0 to 67 | 0 to 50 | DRY - 4 to 10 weeks |
| Gabon | 17 to 155 | 9 to 60 | DRY - 4 weeks |
| Kenya and Tanzania | 1 to 51 | 2 to 33 | DRY - 10 weeks |
| Southern Africa | 0 to 30 | 0 to 29 | DRY - 4 to 30 weeks |
| ASIA | | | |
| Sri Lanka and Southern India | Around 0 | Around 0 | DRY - 6 to 16 weeks |
| Thailand | 0 to 6 | 0 to 9 | DRY - 10 weeks |
| Western and Central Japan, Korea, and China | 65 to 626 | 142 to 442 | WET - 4 to 13 weeks |
| Northern Japan | 7 to 19 | 16 to 33 | DRY - 6 to 18 weeks |
| AUSTRALIA AND WESTERN PACIFIC | | | |
| Philippines and Northern Borneo | 4 to 148 | 6 to 45 | DRY - 8 to 20 weeks |
| Marshall and Caroline Islands | 4 to 66 | 2 to 18 | DRY - 12 weeks |
| Papua New Guinea and Solomon Islands | 64 to 81 | 19 to 35 | DRY - 6 to 9 weeks |
| Eastern Australia | 0 to 141 | 0 to 31 | DRY - 5 to 10 weeks |
| Tasmania | 1 to 30 | 3 to 53 | DRY - 10 weeks |
| Western Australia | 92 to 154 | 436 to 731 | WET - 8 to 10 weeks |

3-MONTH GLOBAL PRECIPITATION ANOMALIES

JANUARY - MARCH 1992

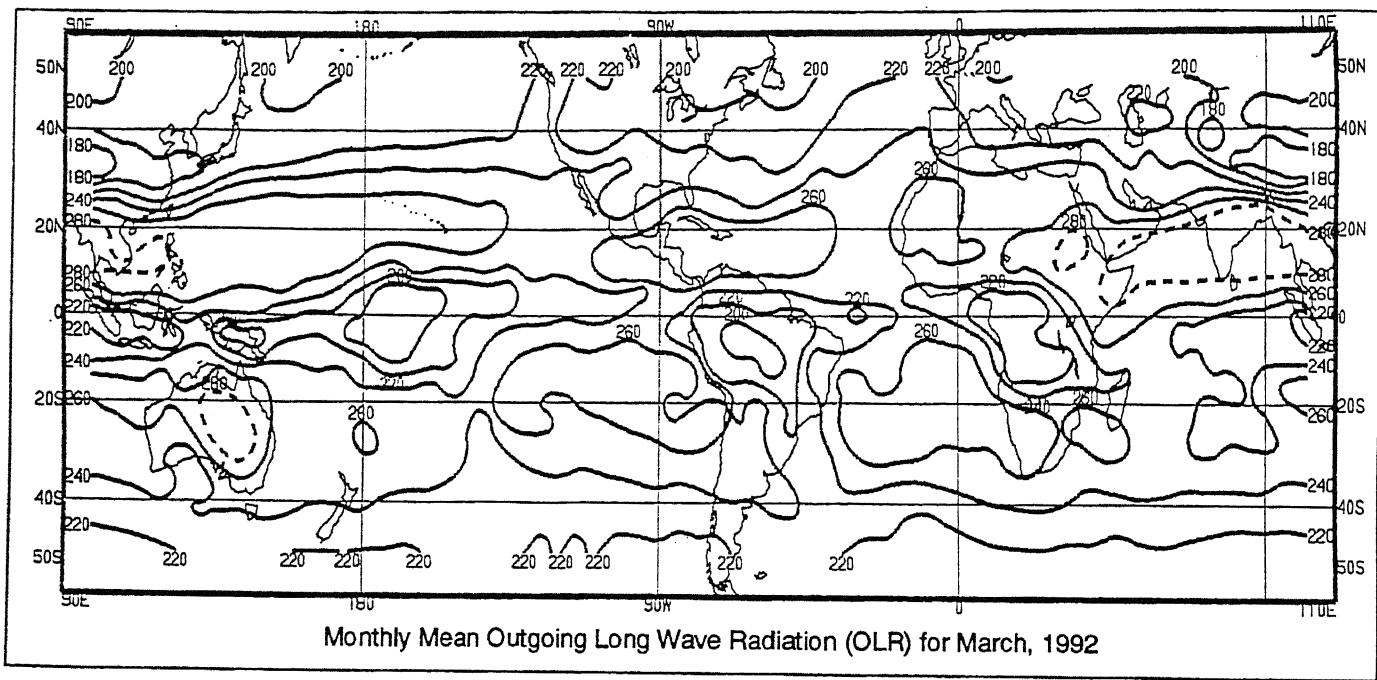


The anomalies on this chart are based on approximately 2500 observing stations for which at least 81 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the three month period is less than 50 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total three month precipitation exceeds 125 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of three month precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.



EXPLANATION

The mean monthly outgoing long wave radiation (OLR) as measured by the NOAA-9 AVHRR IR window channel by NESDIS/SRL (top). Data are accumulated and averaged over 2.5° areas to a 5° Mercator grid for display. Contour intervals are 20 Wm^{-2} , and contours of 280 Wm^{-2} and above are dashed. In tropical areas (for our purposes 20°N – 20°S) that receive primarily convective rainfall, a mean OLR value of less than 200 Wm^{-2} is associated with significant monthly precipitation, whereas a value greater than 260 Wm^{-2} normally indicates little or no precipitation. Care must be used in interpreting this chart at higher latitudes, where much of the precipitation is non-convective, or in some tropical coastal or island locations, where precipitation is primarily orographically induced. The approximate relationship between mean OLR and precipitation amount does not necessarily hold in such locations.

The mean monthly outgoing long wave radiation anomalies (bottom) are computed as departures from the 1979 – 1988 base period mean. Contour intervals are 15 Wm^{-2} , while positive anomalies (greater than normal OLR, suggesting less than normal cloud cover and/or precipitation) are dashed and negative anomalies (less than normal OLR, suggesting greater than normal cloud cover and/or precipitation) are solid.

